

Claims 26-31

By the present amendment, claim 26 has been amended to more clearly define the features of the invention that are not disclosed or taught by the combination of references cited by the Examiner in the Office Action. Specifically, claim 26 has been amended to specify that the main housing includes an outer wall that is configured to closely conform to the shape of the motor assembly. As described in the specification, the close conformance between the main housing and the shape of the motor assembly creates a curtain of air that flows axially over the motor assembly.

The main housing of claim 26 includes an end plate that has a pair of columns that project axially from the end plate and contact the stator. The combination of the pair of columns formed on the end plate of the main housing and the pair of mounting posts formed on the mounting bracket suspend the motor assembly within the main housing such that the motor assembly does not contact the outer wall of the main housing. This particular mounting arrangement of the motor assembly within the main housing, in connection with the configuration of the outer housing, allows for a curtain of air to pass over the motor housing without being impeded by points of contact between the motor assembly and the main housing.

As required by claim 26, rotation of the impeller draws a flow of cooling air through the vents in the main housing. The flow of cooling air drawn through the vents is directed axially along the motor assembly between the motor assembly and the outer wall of the main housing. The axial flow of cooling air is not impeded by any points of contact between the motor assembly and the main housing, such that a smooth curtain of air is drawn axially over the motor assembly to cool the motor assembly. As required by claim 26, the impeller is encompassed within the end cap attached to the main housing such that rotation of the impeller draws a concentrated flow of air through the main housing over the motor assembly.

In rejecting claim 26, the Examiner stated that the Larsh '399 reference taught an impeller to circulate air through the vent slots in the main housing to cool a motor. In the Larsh '399 reference, the subject matter of the disclosure is an electric fan that includes fan blades to create an external flow of air for cooling a specific area. The surface area of the fan blades is much greater than the motor housing and the fan

blades are not located in the housing itself. Thus, the flow of air created by the fan blades is drawn from a surface area much larger than the motor housing, such that a flow of air is not necessarily created through the motor housing. Further, the Larsh '399 reference teaches lugs 34 and 35 that extend from the outer wall of the motor housing and contact the motor stator such that the motor stator rests upon the lugs and is loosely supported within the casing 2. The lugs create points of contact between the motor assembly and the outer housing, which further restrict the flow of air through the housing.

As required by amended independent claim 26, the outer wall of the main housing is configured to closely conform to the shape of the motor assembly without ever contacting the motor assembly. Specifically, the combination of the mounting posts of the mounting bracket and the columns of the endplate suspend the motor assembly within the main housing. The close conformance between the motor assembly and the outer housing allows a curtain of air to flow through the motor housing and cool the motor assembly. This feature is not shown nor suggested by the Larsh '399 reference.

In the Office Action, the Examiner cited the Zimmermann '196 reference as including an impeller that creates a flow of air within the motor housing. However, in the Zimmermann '196 reference, the openings 62 through which air flows are formed by the difference in size between the cover 60 and the outer walls of the pump housing. Clearly, these openings are not formed to create an axial flow of air to cool the motor housing, as required by claim 26. Instead, the openings shown in the Zimmermann '196 patent are spaced radially away from the bobbin such that air must flow through the openings, over a tortured path, and through a substantial portion of the housing before reaching the motor assembly. Further, there is no axial venting that would allow the flow of air to pass axially over the motor assembly, as required by claim 26. Instead, the flow of air in the Zimmermann '196 reference must flow back out of the same openings through which it entered. Clearly, the invention of claim 26 is not obvious in light of the Zimmermann '196 reference.

Finally, the Examiner cited the Bright '043 reference illustrating an end plate attachable to the stator to support the main housing. Although the motor

assembly in the Bright '043 patent is supported, the support arrangement is entirely different than the support arrangement required by amended claim 26.

For the reasons identified above, independent claim 26 is believed to be allowable over the references cited by the Examiner. Dependent claims 27-31 depend directly or indirectly from claim 26 and are thus believed to be allowable for the above reasons, as well as in view of the subject matter of each claim.

Claims 32-39

By the present amendment, claim 32 has been amended to indicate that the main housing has an outer wall configured to closely conform and encompass the stator, the rotor and the bobbin. Further, the end plate is amended to include a pair of columns projecting axially from the end plate to contact the stator and attach to the mounting bracket to support the stator, the rotor and bobbin within the main housing without contacting the outer wall of the main housing. The close conformance between the main housing and the motor assembly allows for a curtain of air to flow along the motor assembly.

As discussed above in the arguments for allowance of claim 26, neither the Larsh '399, Zimmermann '196 or Bright '043 reference teach or suggest the mounting arrangement and close conformance between the main housing outer wall and the motor assembly to create the flow of air required by claim 32. For this reason, claim 32 is believed to be allowable over the cited references.

Dependent claims 34-39 depend directly or indirectly from claim 32 and are believed to be allowable for the above reasons, as well as in view of the subject matter of each claim.

Conclusion

By the present amendment, the applicants' attorney has made every effort to present claims 26-32, 34-39 in a form that is believed to be allowable over the references cited by the Examiner. Thus, applicants' attorney hereby requests the passage of the application to allowance.

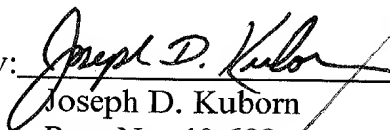
Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Marked-Up Version Claims".

The Examiner is invited to contact applicants' undersigned attorney with any suggestions or comments, or to otherwise facilitate prosecution.

Respectfully submitted,

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MARKED-UP VERSION OF CLAIMS

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26. (Amended) A method of enclosing a C-frame motor having a motor assembly including a stator, a rotor rotatable within the stator and at least one bobbin having electrical conductor windings situated thereon, the method comprising the steps of:

providing a mounting bracket having a pair of mounting posts positionable in contact with the motor assembly adapted to attach to the stator;

providing a main housing having an outer wall aperture configured to closely conform to the shape of the motor assembly, the main housing including an end plate having a pair of columns projecting axially from the end plate, the columns being positionable in contact with the stator and adapted to attach to the mounting bracket, wherein the main housing includes a plurality of vents;

positioning the mounting bracket and the motor assembly within the main housing;

securing the end plate of the main housing to the mounting bracket such that the motor assembly is supported within the main housing free from contact with the outer wall of the main housing;

providing at least one impeller rotatable with the rotor; and

providing an end cap attachable to the main housing for encompassing the impeller; and

operating the motor such that rotation of the rotor causes the impeller to rotate to draw a flow of cooling air through the vents in the main housing, wherein the close spacing between the outer wall of the main housing and the motor assembly directs to direct a curtain of air over the motor assembly to cool the motor assembly.

29. (Amended) ~~The method of claim 26 further comprising the step of providing an end cap attachable to the main housing for encompassing the impeller,~~ wherein the end cap includes a plurality of vent slots such that rotation of the impeller circulates air through the vent slots formed in the end cap to cool the motor assembly.

32. (Twice Amended) A C-frame motor comprising:
a stator having a plurality of electrically conductive laminations, wherein the laminations have portions which define rotor apertures and portions which define radially extended projections;
a rotor having a plurality of laminations and sized to be rotatably received within the rotor apertures of the stator laminations, the rotor being rotatably mounted to a rotor shaft;
at least one bobbin having a plurality of coils comprising at least one wound electrical conductor wherein the bobbin is attached to the radially extended projections of the stator;
a mounting bracket including a pair of mounting posts positionable in contact with the stator ~~attached to the stator~~, wherein the mounting bracket rotatably supports the rotor shaft;
a main housing having an outer wall configured to closely conform to and encompass the stator, the rotor and the bobbin, the main housing including an end plate having a pair of columns projecting axially from the end plate, the columns being in contact with the stator and attachable to the mounting bracket to support the stator, the rotor and the bobbin within the main housing free from contact with the outer wall, the main housing having a plurality of vent slots;
an impeller mounted to the rotor shaft for rotation with the rotor, wherein rotation of the impeller draws a flow of cooling air in ~~circulates air through the vent slots in the main housing, wherein the close spacing between the main housing and the motor creates a curtain of~~

cooling air that flows axially over the stator, the rotor and the bobbin to
cool the motor; and

an end cap attachable to the main housing and configured to
encompass the impeller.